



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/931,449	08/16/2001	Santosh S. Arcot	112802.2901	2650

27160 7590 01/02/2004

PATENT ADMINSTRATOR  
KATTEN MUCHIN ZAVIS ROSENMAN  
525 WEST MONROE STREET  
SUITE 1600  
CHICAGO, IL 60661-3693

EXAMINER

LU, FRANK WEI MIN

ART UNIT	PAPER NUMBER
----------	--------------

1634

DATE MAILED: 01/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

SM

**Advisory Action**

Application No.

09/931,449

SM

Applicant(s)

ARCOT, SANTOSH S.

Examiner

Frank W Lu

Art Unit

1634

--The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

THE REPLY FILED 26 August 2003 FAILS TO PLACE THIS APPLICATION IN CONDITION FOR ALLOWANCE. Therefore, further action by the applicant is required to avoid abandonment of this application. A proper reply to a final rejection under 37 CFR 1.113 may only be either: (1) a timely filed amendment which places the application in condition for allowance; (2) a timely filed Notice of Appeal (with appeal fee); or (3) a timely filed Request for Continued Examination (RCE) in compliance with 37 CFR 1.114.

**PERIOD FOR REPLY** [check either a) or b)]

- a) ☒ The period for reply expires 3 months from the mailing date of the final rejection.
- b) ☐ The period for reply expires on: (1) the mailing date of this Advisory Action, or (2) the date set forth in the final rejection, whichever is later. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of the final rejection.

ONLY CHECK THIS BOX WHEN THE FIRST REPLY WAS FILED WITHIN TWO MONTHS OF THE FINAL REJECTION. See MPEP 706.07(f).

Extensions of time may be obtained under 37 CFR 1.136(a). The date on which the petition under 37 CFR 1.136(a) and the appropriate extension fee have been filed is the date for purposes of determining the period of extension and the corresponding amount of the fee. The appropriate extension fee under 37 CFR 1.17(a) is calculated from: (1) the expiration date of the shortened statutory period for reply originally set in the final Office action; or (2) as set forth in (b) above, if checked. Any reply received by the Office later than three months after the mailing date of the final rejection, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

1. ☐ A Notice of Appeal was filed on \_\_\_\_\_. Appellant's Brief must be filed within the period set forth in 37 CFR 1.192(a), or any extension thereof (37 CFR 1.191(d)), to avoid dismissal of the appeal.
2. ☒ The proposed amendment(s) will not be entered because:
- (a) ☒ they raise new issues that would require further consideration and/or search (see NOTE below);
- (b) ☐ they raise the issue of new matter (see Note below);
- (c) ☐ they are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal; and/or
- (d) ☐ they present additional claims without canceling a corresponding number of finally rejected claims.

NOTE: \_\_\_\_\_

3. ☐ Applicant's reply has overcome the following rejection(s): \_\_\_\_\_.
4. ☐ Newly proposed or amended claim(s) \_\_\_\_\_ would be allowable if submitted in a separate, timely filed amendment canceling the non-allowable claim(s).
5. ☐ The a) ☐ affidavit, b) ☐ exhibit, or c) ☐ request for reconsideration has been considered but does NOT place the application in condition for allowance because: \_\_\_\_\_.
6. ☐ The affidavit or exhibit will NOT be considered because it is not directed SOLELY to issues which were newly raised by the Examiner in the final rejection.
7. ☒ For purposes of Appeal, the proposed amendment(s) a) ☒ will not be entered or b) ☐ will be entered and an explanation of how the new or amended claims would be rejected is provided below or appended.

The status of the claim(s) is (or will be) as follows:

Claim(s) allowed: \_\_\_\_\_.

Claim(s) objected to: \_\_\_\_\_.

Claim(s) rejected: 3,5-29,35 and 36.

Claim(s) withdrawn from consideration: \_\_\_\_\_.

8. ☐ The drawing correction filed on \_\_\_\_\_ is a) ☐ approved or b) ☐ disapproved by the Examiner.
9. ☐ Note the attached Information Disclosure Statement(s) (PTO-1449) Paper No(s). \_\_\_\_\_.
10. ☐ Other: \_\_\_\_\_

Art Unit: 1634

### **ADVISORY ACTION**

1. The proposed amendments filed on November 24, 2003 have been fully considered but will not be entered because they raise new issues that would require further consideration and/or search.

#### ***Response to Arguments***

I. In page 14, second paragraph bridging to page 15, first paragraph of applicant's remarks, applicant argues that "[T]he Final Office Action cites this passage as an example of identifying multiple target sequences. The Final Office Action notes, correctly, that complementary sequences are different. However, the Final Office Action alleges that, since these primers can attach to microspheres, they are considered as two subsets of bound primers. Without acquiescing in the allegation that both primers may be bound to microspheres, Applicant submits respectfully that both primers are not disclosed as being bound to microspheres', accordingly they do not teach two subsets of bound probes. Furthermore, the Final Office Action alleges that primers that are complementary to each other are substantially identical. Applicant submits respectfully that one skilled in the art would recognize that complementary sequences are, by definition, completely different from each other except for rare palindromic sequences. The Final Office Action alleges that Applicant's definition of "substantially identical" sequences allows that such sequences may contain some differences. However, as the Examiner admits in line 5 of page 12 of the Final Office Action, substantially identical nucleotides bind to the same sequence. By definition, complementary sequences bind each other, not the same sequence (except in the case of

Art Unit: 1634

palindromic sequences, such as restriction sites). Accordingly, complementary sequences cannot be substantially identical.”.

These arguments have been fully considered but they are not persuasive toward the withdrawal of the rejection. First, claims 3 and 5 are rejected in view of the ambiguity of claims since the beginning of the claims and the end of the claims do not correspond each other. In claim 3, the beginning of the claim requires that a sample suspected of containing one target nucleic acid sequences contacts with one subset of spectrally-addressable bound probe. However, the end of the claim requires two target nucleic acid sequences and two subsets of spectrally-addressable bound probes (see previous rejections under 35 USC 112, second paragraph). It is not unclear whether the claim 5 requires two subsets of spectrally-addressable bound probes or not. Second, according to the specification (page 9), “substantially identical” means that, when used in connection with the phrase nucleotide sequence, “one or more nucleotides at one or more positions of probes in a subset may differ due to one or more substitutions, insertions, deletions, or combinations thereof but can still be distinguished from probes belonging to another subset and can substantially hybridize to the correct position on the target molecule,” complementary sequences can be substantially identical since complementary sequences can have more than one substitutions, can still be distinguished each other and can substantially hybridize (ie., partially) to the correct position on a target molecule.

II. In page 15, last paragraph of applicant’s remarks, applicant argues that “with respect to Claim 9, the Final Office Action alleges that amplification of the target sequence by RCA (rolling circle amplification) anticipates the PCR amplification of Claim 9. One skilled in the art will

Art Unit: 1634

recognize immediately that RCA and PCR are two entirely different processes. Also, the Final Office Action suggests that the thermostable ligase claimed in Claim 7 is anticipated by the ligase used in Chee's OLA because the ligation reaction is performed at a temperature that optimizes the activity of the ligase. One skilled in the art will recognize immediately that a thermostable ligase is one that can withstand temperatures approaching or exceeding the 100 degrees Celsius, as can the thermostable polymerases disclosed by Chee, not a ligase that has an optimal temperature. Chee does not disclose thermostable ligase."

These arguments have been fully considered but they are not persuasive toward the withdrawal of the rejection. First, the examiner agrees with applicant that "RCA and PCR are two entirely different processes.". However, claim 9 is not directed to a PCR method but is directed to polymerase chain reaction components which are also used in RCA. Second, one skilled in the art will not recognize immediately that a thermostable ligase is one that can withstand temperatures approaching or exceeding the 100 degrees Celsius since claim 7 does not define that a thermostable ligase is one that can withstand temperatures approaching or exceeding the 100 degrees Celsius.

III. In page 15, last paragraph of applicant's remarks, applicant argues that "[W]ith regard to Claims 35 and 36, the Final Office Action alleges that Chee discloses microspheres with modifier moieties comprising primary amino groups. However, Claims 35 and 36 actually claim that the amine modifier is present on the oligonucleotide probe of the bound probe, not on the microsphere. Likewise, Claim 10 is not anticipated by Chee as Chee does not disclose the

Art Unit: 1634

modifier moiety at one end of the oligonucleotide probe of the bound probe; accordingly, none of the claims dependent from Claim 10 can be anticipated.”.

These arguments have been fully considered but they are not persuasive toward the withdrawal of the rejection because applicant's arguments with respect to claims 10, 35, and 36 are moot since applicant has amended the phrase “wherein the bound probes of a given subset further comprise having a modified moiety” in claim 10 to “wherein the oligonucleotide probes of a given subset of bound probes further comprise an oligonucleotide at one of their ends having a modified moiety”. This new amendment in claim 10 raises new issues that would require further consideration and/or search.

IV. In page 17, third paragraph of applicant's remarks, applicant argues that “[T]he Final Office Action alleges that the beginning and end of each claim do not correspond to each other. The Final Office Action alleges that the beginning of each of the claims recites, variously, only one target nucleic acid, free probe, or bound probe, whereas the end of each of the claims recites, variously, two target nucleic acids, free probes, or bound probes. Applicants traverse respectfully. Applicant directs Examiner's attention to the first paragraph following the preamble of each of Claims 3 and 5, wherein the claims recite ‘one or more target nucleic acid sequences with one or more subsets of free probes and one or more subsets of spectrally-addressable bound probes’ (emphasis added). In view of the claims' recitation, Applicant submits respectfully that the Final Office Action is in error with regard to the allegations of paragraphs 8 and 9.”.

These arguments have been fully considered but they are not persuasive toward the withdrawal of the rejection because “contacting one or more target nucleic acid sequences with

Art Unit: 1634

one or more subsets of free probes and one or more subsets of spectrally-addressable bound probes" can be read as "contacting one target nucleic acid sequences with one subset of free probes and one subset of spectrally-addressable bound probes".

V. Related to arguments in claims 3 and 5 in page 16, second paragraph bridging to page 17, first paragraph of applicant's remarks.

These arguments have been fully considered but they are not persuasive toward the withdrawal of the rejection because applicant's arguments with respect to claims 3 and 5 are moot since applicant has amended the phrase "at least one" in claims 3 and 5 to "one or both".

VI. In page 18, first and second paragraphs of applicant's remarks, applicant argues that "[T]he Final Office Action alleges that Claim 6 does not correspond to Claim 5 because Claim 5 requires that 'the sample' is contacted with two subsets of free probes, whereas Claim 6 only requires that 'a portion' of the sample contacts either the first or second subsets of free probes. Applicants traverse respectfully. Respectfully, Applicant directs the Examiner's attention to the full recitation of Claim 6, which recites that 'the assay is performed in a first and a second reaction vessel' and that both 'a portion of the sample is contacted with the first subset of free probes in the first reaction vessel and a portion of the sample is contacted with the second subset of free probes in the second reaction vessel' (emphasis added). Accordingly, one skilled in the art would recognize that the sample is split into two portions, each of which is placed in a different reaction vessel and contacted with one of the two recited subsets of free probes. Accordingly, the sample as a whole is contacted by both subsets of free probes."

The examiner agrees with these arguments.

Art Unit: 1634

VII. Related to arguments on claims 8 and 10 in pages 18, third paragraph bridging to page 20, first paragraph of applicant's remarks.

These arguments have been fully considered but they are not persuasive toward the withdrawal of the rejection because applicant's arguments with respect to claims 8 and 10 are moot since applicant has amended the phrase "wherein the bound probes of a given subset further comprise having a modified moiety" in claim 10 to "wherein the oligonucleotide probes of a given subset of bound probes further comprise an oligonucleotide at one of their ends having a modified moiety" and added a phrase "but wherein each subset of bound probes incorporates a distinctly different amount of fluorescence dye" in claim 8. These new amendments in claims 8 and 10 raise new issues that would require further consideration and/or search.

VIII. Related to arguments on claims 15, 16, 20, and 24-26 in page 19, first paragraph bridging to page 22, second paragraph of applicant's remarks.

These arguments have been fully considered but they are not persuasive toward the withdrawal of the rejection because applicant's arguments with respect to claims 15, 16, 20, and 24-26 are moot since applicant has amended claims 15, 16, 20, 22, 25, and 26. These new amendments in claims 15, 16, 20, and 24-26 raise new issues that would require further consideration and/or search.

IX. Related to arguments on claim 28 on page 22, third and fourth paragraphs of applicant's remarks.

These arguments have been fully considered but they are not persuasive toward the withdrawal of the rejection because applicant's arguments with respect to claim 28 is moot since



Art Unit: 1634

applicant has amended claim 10 and added "or unique fluorescence intensity" in claim 10. This new amendment raises new issues that would require further consideration and/or search.

X. In page 23, second paragraph bridging to page 24, second paragraph of applicant's remarks, applicant argues that "[W]ith regard to the allegations of paragraph 2, Applicant submits respectfully that the 'contacting step' recited at the beginning of each of the claims is not identical to the contacting step in the last paragraph of each of the claims. In each case, the contacting step at the beginning of the claim is recited as part of a general description of the method of claim, and the second recitation of the contacting step is a more precise description of the contacting step as applied particularly to each claim. For example, in Claim 3, the last paragraph limits the general contacting step at the beginning of the paragraph to particular conditions wherein each of the target nucleic acid sequences have different sequences in their first portion, but substantially identical sequences in their second portion. Accordingly, in this example, the spectrally-addressable bound probes have different sequences one from another, but the free probes have substantially identical nucleotide sequences. The general description would allow the free probes to have different sequences, one from another. Conversely, in Claim 5, the later description of the contacting step provides that the spectrally-addressable bound probes substantially identical nucleotide sequences whereas the free probes have different sequences, one from another. The general description would allow the bound probes to have different sequences, one from another."

These arguments have been fully considered but they are not persuasive toward the withdrawal of the objection because applicant does not explain why claims 3 and 5 require a

Art Unit: 1634

general contacting step and a particular contacting step which are not correspond each other. One skill in the art will have difficult to understand why a method recited in claims 3 and 5 need have two contacting steps which are not correspond each other.

XI. Related objections on claim 23 and substitute specification in page 24, third and fourth paragraphs of applicant's remarks.

These arguments have been fully considered but they are not persuasive toward the withdrawal of the objection because applicant's arguments with respect to claim 23 and substitute specification are moot since applicant has amended claim 23 and submitted an amended clean copy of the specification. This new amendment and newly submitted amended clean copy of the specification raises new issues that would require further consideration and/or search.

2 Papers related to this application may be submitted to Group 1600 by facsimile transmission. Papers should be faxed to Group 1600 via the PTO Fax Center located in Crystal Mall 1. The faxing of such papers must conform with the notices published in the Official Gazette, 1096 OG 30 (November 15, 1988), 1156 OG 61 (November 16, 1993), and 1157 OG 94 (December 28, 1993)(See 37 CAR § 1.6(d)). The CM Fax Center number is either (703) 308-4242 or (703)305-3014.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Frank Lu, Ph.D., whose telephone number is (703) 305-1270 (before January 13, 2004) or 571-272-0746 (after January 13, 2004). The examiner can normally be reached on Monday-Friday from 9 A.M. to 5 P.M.

Art Unit: 1634

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Benzion, can be reached on (703) 308-1119.

Any inquiry of a general nature or relating to the status of this application should be directed to the Chemical Matrix receptionist whose telephone number is (703) 308-0196.

Frank Lu  
PSA  
December 17, 2003

  
**OJ FORMAN, PH.D.**  
**PRIMARY EXAMINER**